

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A computer-implemented method of generating optimized platform location sets locations for extracting hydrocarbons from underground reservoirs, comprising:

computing a maximum number of targets to be assigned for each of a user-specified number of platforms by determining the product of a user-specified number of slots and a user-specified number of targets per slot;

selecting a possible set of platform locations from at least one of a number of X and Y coordinates from automatically generated target locations, a user-specified number of platform locations, or a generated grid of evenly spaced platform locations;

validating the set of possible platform locations to determine that each possible platform location in the set is in a geographically valid area by comparing each possible platform location against a set of exclusionary polygons;

determining a best set of platform locations from the set of possible platform locations by an iterative process which adds each of the possible platform locations to a list comprising the user-specified number of platforms and determining if the inclusion of each one of the possible platform locations in the list causes the total set of platforms to reach at least one of: more targets or the same number of targets with less total distance; and

optimizing each platform location in the best set of platform locations by an iterative process which determines whether an improvement is achieved by moving each of the platform

locations within a fraction of a platform reach in eight compass directions around a current selected best platform location.

~~selecting a set of surface platform locations;~~

~~determining additional surface platform locations to add to the set of surface platform locations; and~~

~~determining an optimum surface location for each surface platform location in the set of surface platform locations.~~

2-4. (Canceled)

5. (Currently Amended) The method of claim 1, wherein optimizing each ~~the~~ platform location ~~set~~ includes:

(a) setting an initial step-out distance equal to ~~[[a]]~~ the fraction of ~~[[a]]~~ the platform reach;

(b) selecting a potential new platform location located the step-out distance from the original platform location in one of the eight compass directions; ~~moving each of the additional platform locations in the set in eight compass directions, and if a new location is better than an original location, moving each of the additional platform locations to a new location, wherein the determination that a new location is better than an original location comprises determining at least one of the following:~~

~~determining that more targets may be reached from the new location than~~

~~from the original location, each target representing a drilling location for a well;~~

~~determining that the same number of targets may be reached from the new location with less total distance; and~~

~~determining that the number of targets reachable from the new location have a higher cumulative target value; and~~

~~(c) validating the potential new platform location; executing step (b) until new locations for each of the additional platform locations are no longer achieved; and~~

~~(d) computing at least one of the number of targets that could be reached from the potential new platform location or the total drilling distance to reach all the targets to be reached from the potential new platform location; executing steps (a) through (c) progressively decreasing the step out distance until a more desirable set of platform locations are no longer achieved.~~

~~(e) comparing the computed number of targets that could be reached from the potential new platform location or the total drilling distance to reach all the targets to be reached from the potential new platform location against the values at the original platform location;~~

~~(f) determining that the potential new platform location is better than the original location based on at least one of the following: more targets may be reached from the potential new platform location than from the original platform location and the same number of targets may be reached from the potential new platform location with less drilling distance than from the original platform location;~~

~~(g) moving the original platform location to the potential new platform location; and~~

(h) executing steps (b) to (g) for other compass directions; and

(i) executing steps (b) through (h) by progressively decreasing the step-out distance until a more desirable platform location is no longer achieved.

6. (Currently Amended) The method of claims 5, wherein the initial step-out distance is reduced by a predetermined amount for each execution of step (i) ~~Step (d)~~.

7. (Currently Amended) A computer-readable medium having computer-executable instructions which when executed on a computer perform a process for generating optimized platform locations for extracting hydrocarbons from underground reservoirs, the process comprising:

computing a maximum number of targets to be assigned for each of a user-specified number of platforms by determining the product of a user-specified number of slots and a user-specified number of targets per slot;

selecting a possible set of platform locations from at least one of a number of X and Y coordinates from automatically generated target locations, a user-specified number of platform locations, or a generated grid of evenly spaced platform locations;

validating the set of possible platform locations to determine that each possible platform location in the set is in a geographically valid area by comparing each possible platform location against a set of exclusionary polygons;

determining a best set of platform locations from the set of possible platform locations by an iterative process which adds each of the possible platform locations to a list comprising the user-specified number of platforms and determining if the inclusion of each one of the possible platform locations in the list causes the total set of platforms to reach at least one of: more targets or the same number of targets with less total distance; and

optimizing each platform location in the best set of platform locations by an iterative process which determines whether an improvement is achieved by moving each of the platform locations within a fraction of a platform reach in eight compass directions around a current selected best platform location.

~~selecting a set of surface platform locations;~~

~~determining additional surface platform locations to add to the set of surface platform locations; and~~

~~determining an optimum location for each surface platform location in the set of surface platform locations.~~

8-10. (Canceled)

11. (Currently Amended) The computer-readable medium of claim 7, wherein optimizing ~~the~~ each platform location ~~set~~ includes:

(a) setting an initial step-out distance equal to ~~[[a]]~~ the fraction of ~~[[a]]~~ the platform reach;

(b) selecting a potential new platform location located the step-out distance from the original platform location in one of the eight compass directions; moving each of the additional platform locations in the set in eight compass directions, and if a new location is better than an original location, moving each of the additional platform locations to a new location, wherein the determination that a new location is better than an original location comprises determining at least one of the following:

determining that more targets may be reached from the new location than from the original location, each target representing a drilling location for a well;

determining that the same number of targets may be reached from the new location with less total distance; and

determining that the number of targets reachable from the new location have a higher cumulative target value; and

(c) validating the potential new platform location; executing step (b) until new locations for each of the additional platform locations are no longer achieved; and

(d) computing at least one of the number of targets that could be reached from the potential new platform location or the total drilling distance to reach all the targets to be reached from the potential new platform location; executing steps (a) through (c) progressively decreasing the step-out distance until a more desirable set of platform locations are no longer achieved.

(e) comparing the computed number of targets that could be reached from the potential new platform location or the total drilling distance to reach all the targets to be reached from the potential new platform location against the values at the original platform location;

(f) determining that the potential new platform location is better than the original location based on at least one of the following: more targets may be reached from the potential new platform location than from the original platform location and the same number of targets may be reached from the potential new platform location with less drilling distance than from the original platform location;

(g) moving the original platform location to the potential new platform location; and

(h) executing steps (b) to (g) for other compass directions; and

(i) executing steps (b) through (h) by progressively decreasing the step-out distance until a more desirable platform location is no longer achieved.

12. (Currently Amended) The computer-readable medium of claim[[s]] 11, wherein the initial step-out distance is reduced by a predetermined amount for each execution of ~~Step (d)~~ step (i).

13-18. (Canceled)